

Claim Sheets – Supplemental Preliminary Amendment

Docket 261/136

92. A method for cleaning a surface of a semiconductor article, comprising the steps of:
loading the semiconductor article into a chamber;
providing a heated liquid solution onto the surface of the article within the chamber, the
solution including deionized water;

B1 providing ozone into the chamber; and
rotating the article within the chamber with the heated liquid solution on the surface of the
article.

93. The method of claim 92 where the solution is heated to a temperature between
room temperature and 100°C.

94. The method of claim 92 where the solution is heated to a temperature between 50-
90°C.

95. The method of claim 92 where the article is rotated at 200-2000rpm.

97. A method for cleaning a semiconductor article, comprising the steps of:
contacting the article with a heated oxidizing solution;
exposing the article to a vapor comprising ozone;
rotating the article; and
rinsing the article.

98. A method for cleaning semiconductor wafers comprising:

- Sub D
- (a) rotating a wafer in a processing chamber;
 - (b) contacting the wafer with an aqueous solution and simultaneously contacting the wafer with ozone in an amount sufficient to create an oxidizing effect on the surface of the wafer to oxidize contaminants thereon; and
 - (c) rinsing the surface of the wafer to remove oxidized contaminants from the ~~surface thereof.~~
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99. A method as defined in claim 98 wherein the aqueous solution is water.

Sub G1

100. A method as defined in claim 98 wherein the aqueous solution contains an acid.

101. A method as defined in claim 98 wherein the aqueous solution is sprayed onto the surface of the wafer to form a thin aqueous film thereon.

102. A method as defined in claim 98 wherein the aqueous solution is adjusted to a temperature sufficient to effect oxidation on the surface of the wafer.

Sub E2

103. A method as defined in claim 102 wherein the temperature of the solution is less than 200°C.

104. A method as defined in claim 98 wherein the ozone is injected into the processing chamber.

Sub 617
105. A method as defined in claim 98 wherein the ozone is admixed with a carrier gas.

106. A method as defined in claim 105 wherein the carrier gas is selected from the group consisting of oxygen, nitrogen, air and inert gas.

Sub D2
107. A method for cleaning semiconductor wafers comprising:

- 107!
(a) spraying onto a rotating wafer an aqueous solution while simultaneously contacting the wafer with ozone to effect oxidation on the surface of the wafer; and
- (b) rinsing the surface of the wafer.

108. A method as defined in claim 107 wherein the aqueous solution is water.

109. A method as defined in claim 107 wherein the aqueous solution includes an acid.

110. A method as defined in claim 107 wherein the aqueous solution is sprayed onto the surface of the wafer to form a thin aqueous film thereon.

111. A method as defined in claim 107 wherein the ozone is admixed with a carrier gas.

112. A method for cleaning semiconductor wafers to remove organic materials from the surface there of comprising:

- Sub D3
- (a) spraying onto the surface of a rotating wafer an aqueous solution and simultaneously contacting the wafer surface with ozone to effect oxidation of the organic materials on the surface of the wafer to oxidize said contaminants; and
- (b) removing from the surface of the wafer oxidized contaminants.
- B1

113. A method as defined in claim 112 wherein the aqueous solution is water.

114. A method as defined in claim 112 wherein the aqueous solution contains an acid.

115. A method as defined in claim 112 wherein the aqueous solution is sprayed onto the surface of the wafer to form a thin aqueous film thereon.

116. A method as defined in claim 112 wherein the oxidized contaminants are removed from the surface of the wafer by rinsing the wafer surface.